IN THE CLAIMS

Please cancel claims 1-11, 22, 23, and 38-54; amend claims 12-21, and 24-37; and add new claims 55-75 as follows:

1. (CANCELED)

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11. (CANCELED)

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12. (CURRENTLY AMENDED) A method of transmitting [[layered signals]] a transmission signal having a legacy upper layer signal receivable by a plurality of legacy receivers and a plurality of layered modulation receivers and a lower layer signal non-coherently layered over the legacy upper layer signal, the lower layer signal receivable by the layered modulation receivers and not receivable by the legacy receivers, the method, comprising:

transmitting [[a]] the [[first]] legacy upper layer signal [[layer]] including a first carrier and first signal symbols ~~for a first digital signal transmission~~; and

transmitting a [[second]] lower layer signal [[layer]] including a second carrier and second signal symbols ~~for a second signal transmission disposed over the first signal layer~~;

wherein the layered modulation receivers demodulate the legacy upper layer signal to produce the first signal symbols, remodulate the first signal symbols, and subtract the remodulated first signal symbols from the demodulated legacy upper layer signal to produce the second signal symbols ~~layered signal has the first carrier demodulated and first layer decoded to produce the first signal symbols for a first layer transport, the first signal symbols are remodulated and subtracted from the layered signal to produce the second signal layer, and the second signal layer has the second carrier demodulated and decoded to produce the second signal symbols for a second layer transport~~.

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13. (CURRENTLY AMENDED) The method of claim 12, wherein at least one of the [[first and second signal layers]] legacy upper layer signal and the lower layer signal are quadrature phase shift keyed (QPSK).

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14. (CURRENTLY AMENDED) The method of claim 12, wherein a code rate for at least one of the [[first and second]] legacy upper layer signal and lower layer signal [[layers]] is 6/7.

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15. (CURRENTLY AMENDED) The method of claim 12, wherein a code rate for at least one of the [[first and second]] legacy upper layer signal and lower layer signal [[layers]] is 2/3.

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16. (CURRENTLY AMENDED) The method of claim 12, wherein a code rate for at least one of the [[first and second]] legacy upper layer signal and lower layer signal [[layers]] is 1/2.

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17. (CURRENTLY AMENDED) The method of claim 12, wherein the [[second]] lower layer signal [[layer]] is generated by power boosting a legacy signal.

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18. (CURRENTLY AMENDED) The method of claim 12, wherein a total code and noise level of the [[first]] legacy upper layer signal [[layer]] is no greater than a noise floor of the second signal layer.

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19. (CURRENTLY AMENDED) The method of claim 12, wherein at least one of the [[first and second]] legacy upper layer signal and lower layer signal [[layers are]] is coded using a turbo code.

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20. (CURRENTLY AMENDED) The method of claim 12, wherein both the [[first and second]] legacy upper layer signal and lower layer signal [[layers]] are coded using a single turbo code.

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21. (CURRENTLY AMENDED) A receiver ~~system for demodulating and decoding layered transmission signals,~~ for compatibly receiving a transmission signal having a legacy upper layer signal receivable by a plurality of legacy receivers and a plurality of layered modulation receivers and a lower layer signal non-coherently layered over the legacy upper layer signal, the lower layer signal receivable by the layered modulation receivers and not receivable by the legacy receivers, the receiver comprising:

a first demodulator for demodulating ~~a first carrier of a first layer of a received~~ the legacy upper layer signal to produce a demodulated signal;

a first layer decoder, coupled to the first layer demodulator, for decoding the [[first layer]] demodulated signal to produce [[producing first]] legacy upper layer signal symbols [[for a first layer transport]];

a remodulator, coupled to the first layer decoder, for [[receiving]] remodulating the first signal symbols [[and producing]] to produce a remodulated legacy [[first]] upper layer signal;

a subtracter, coupled to the first demodulator and the remodulator, for subtracting the remodulated legacy upper layer signal [[first layer signal]] from the demodulated [[received]] signal [[and producing]] to produce [[a second]] the lower layer signal;

a second layer demodulator, coupled to the subtracter, the [[receiving the second layer signal]] second layer demodulator for demodulating [[a second carrier of a]] the lower [[second]] layer signal [[and producing]] to produce a second demodulator output; and

a second layer decoder, coupled to the second layer demodulator, the second layer decoder for ~~receiving the second demodulator output and~~ decoding the second layer demodulated output to produce [[producing second]] lower layer signal symbols [[for a second layer transport]].

22. (CANCELED)

23. (CANCELED)

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24. (CURRENTLY AMENDED) The receiver system of claim ~~21~~, further comprising a non-linear distortion map for removing non-linear distortion effects from the [[first signal layer] remodulated legacy upper layer signal.

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25. (CURRENTLY AMENDED) The receiver system of claim 21, wherein the legacy upper layer signal [[first layer of the received signal]] is a boosted legacy signal.

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26. (CURRENTLY AMENDED) The receiver system of claim 21, wherein at least one of the [[first and second]] legacy upper layer signal and lower layer signal [[layers]] are quadrature phase shift keyed (QPSK).

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27. (CURRENTLY AMENDED) The receiver system of claim 21, wherein a code rate for at least one of the [[first and second]] legacy upper layer signal and lower layer signal [[layers]] is 6/7.

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28. (CURRENTLY AMENDED) The receiver system of claim 21, wherein a code rate for at least one of the [[first and second]] legacy upper layer signal and lower layer signal [[layers]] is 2/3.

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29. (CURRENTLY AMENDED) The receiver system of claim 21, wherein a code rate for at least one of the [[first and second]] legacy upper layer signal and lower layer signal [[layers]] is 1/2.

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30. (CURRENTLY AMENDED) The receiver system of claim 21, wherein the second signal layer is generated by power boosting [a] the legacy upper layer signal.

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31. (CURRENTLY AMENDED) The receiver system of claim 21, wherein a total code and noise level of the [[first]] legacy upper layer signal [[layer]] is no greater than a noise floor of the [[second]] lower layer signal [[layer]].

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32. (CURRENTLY AMENDED) The receiver system of claim 21, wherein at least one of the [[first and second]] legacy upper layer signal [[layers]] and lower layer signal [[are]] is coded using a turbo code.

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~~35.~~ (CURRENTLY AMENDED) The receiver system of claim ~~21~~, wherein both the [[first and second]] legacy upper layer signal [[layers]] and lower layer signal are coded using a single turbo code.

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~~34.~~ (CURRENTLY AMENDED) The receiver system of claim ~~21~~, wherein the [[first and second layer]] legacy upper layer signal and lower layer signal each have a carrier frequency that is substantially similar.

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~~35.~~ (CURRENTLY AMENDED) The receiver system of claim ~~21~~, wherein [[the first and second layer]] a carrier frequency of the legacy upper layer signal and a second carrier frequency of the lower layer signal are offset in frequency ~~each have a frequency with a frequency offset thereberween~~.

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~~36.~~ (CURRENTLY AMENDED) The receiver system of claim ~~21~~, wherein the [[remodulator receives]] the first [[decoded symbols]] layer decoder comprises [[after]] a Viterbi decoder.

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~~37.~~ (CURRENTLY AMENDED) The receiver system of claim ~~21~~, wherein the [[remodulator receives]] the first [[decoded symbols]] layer decoder comprises [[after]] a Reed-Solomon decoder.

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53. (CANCELED)

54. (CANCELED)

55. (NEW) The receiver of claim 24, wherein the non-linear distortion map is estimated from the transmission signal.

56. (NEW) The receiver of claim 24, wherein the non-linear distortion map is estimated from transmission signal transmitter characteristics.

57. (NEW) The receiver of claim 56, wherein the transmission signal transmitter characteristics are downloaded to the receiver.

58. (NEW) A method of receiving a transmission signal having a legacy upper layer signal compatibly receivable by a plurality of legacy receivers and a plurality of layered modulation receivers and a lower layer signal non-coherently layered over the upper layer signal, the lower layer signal receivable by the layered modulation receivers and not receivable by the legacy receivers, the method comprising:

demodulating the legacy upper layer signal of the transmission signal to produce a demodulated signal;

decoding the demodulated signal to produce legacy upper layer symbols;

remodulating the legacy upper layer symbols;

subtracting the remodulated legacy upper layer symbols from the demodulated signal to produce the lower layer signal;

demodulating the lower layer signal; and

decoding the demodulated lower layer signal to produce second decoded symbols.

59. (NEW) The method of claim 58, wherein the legacy upper layer signal includes non-linear distortion, and the method further comprises the step of:

removing non-linear distortion effects from the remodulated legacy upper layer symbols before subtracting the remodulated legacy upper layer symbols from the demodulated signal.

60. (NEW) The method of claim 59, wherein the non-linear distortion effects are estimated from the transmission signal.

61. (NEW) The method of claim 59, wherein the non-linear distortion effects are estimated from transmission signal transmitter characteristics.

32 28
62. (NEW) The method of claim 58, wherein the a frequency ω_U of the legacy upper layer signal and a frequency ω_L of the lower layer signal are offset.

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63. (NEW) The method of claim 58, wherein the legacy upper layer symbols are remodulated according to a pulse shaping filter $p(t)$.

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64. (NEW) The method of claim 58, wherein at least one of the legacy upper layer signal and the lower layer signal are quadrature phase shift keyed (QPSK).

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65. (NEW) The method of claim 58, wherein a code rate for at least one of the legacy upper layer signal and the lower layer signal is 6/7.

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66. (NEW) The method of claim 58, wherein a code rate for at least one of the legacy upper layer signal and the lower layer signal is 2/3.

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67. (NEW) The method of claim 58, wherein a code rate for at least one of the legacy upper layer signal and the lower layer signal is 1/2.

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68. (NEW) The method of claim 58, wherein the lower layer signal is generated by power boosting the legacy upper layer signal.

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69. (NEW) The method of claim 58, wherein a total code and noise level of the legacy upper layer signal is no greater than a noise floor of the lower layer signal.

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70. (NEW) The method of claim 58, wherein at least one of the legacy upper layer signal and the lower layer signal is coded using a turbo code.

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71. (NEW) The method of claim 58, wherein both the legacy upper layer signal and the lower layer signal are coded using a single turbo code.

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72. (NEW) The method of claim 58, wherein the legacy upper layer signal and lower layer signal each have a carrier frequency that is substantially similar.

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73. (NEW) The method of claim 58, wherein a carrier frequency of the legacy upper layer signal and a second carrier frequency of the lower layer signal are offset in frequency.

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74. (NEW) The method of claim 58, wherein step of decoding the demodulated signal to produce legacy upper layer symbols comprises the step of Viterbi decoding the demodulated signal.

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75. (NEW) The method of claim 58, wherein the step of decoding the demodulated signal to produce upper layer symbols comprises the step of Reed-Solomon decoding the demodulated signal.

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